APPENDIX III

1999

ALBERTA

MACHINERY & EQUIPMENT

ASSESSMENT MANUAL

Alberta
Municipal Affairs
December 1999

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1.000 SCHEDULE A - BASE COST

The base cost represents the replacement cost of machinery and equipment in 1994.

1.001 MACHINERY AND EQUIPMENT NOT DESCRIBED IN SCHEDULE A

The factors in Table 1 and the formula below shall be used to determine the base cost for machinery and equipment that is not described in Schedule A.

Formula: Base Cost = ac X cf

Where ac = the cost of machinery and equipment in the year it was constructed, as determined by the assessor.

cf = the cost factor to convert the cost of the machinery and equipment (ac) from the year it was constructed in, to its cost in 1994.

TABLE 1 - COST FACTORS

Year of Construction	Cost Factor	Year of Construction	Cost Factor	Year of Construction	Cost Factor
		1942	9.99	1972	3.53
1913	18.86	1943	9.77	1973	3.31
1914	19.51	1944	9.71	1974	2.93
1915	19.88	1945	9.63	1975	2.43
1916	18.35	1946	8.93	1976	2.14
1917	15.57	1947	8.30	1977	1.96
1918	13.56	1948	7.94	1978	1.78
1919	11.97	1949	7.95	1979	1.57
1920	9.80	1950	7.73	1980	1.40
1921	10.87	1951	6.94	1981	1.24
1922	11.78	1952	6.50	1982	1.16
1923	11.48	1953	6.12	1983	1.28
1924	11.61	1954	6.05	1984	1.34
1925	11.79	1955	6.00	1985	1.30
1926	11.89	1956	5.76	1986	1.30
1927	11.90	1957	5.56	1987	1.26
1928	11.62	1958	5.45	1988	1.24
1929	11.18	1959	5.39	1989	1.18
1930	11.57	1960	5.34	1990	1.13
1931	12.46	1961	5.30	1991	1.07
1932	13.43	1962	5.29	1992	1.05
1933	14.08	1963	5.26	1993	1.03
1934	13.87	1964	5.05	1994	1.00
1935	13.73	1965	4.86	1995	0.98
1936	13.34	1966	4.68	1996	0.97
1937	12.49	1967	4.29	1997	0.94
1938	12.72	1968	4.48	1998	0.91
1939	12.60	1969	4.39	1999	0.88
1940	11.96	1970	3.97	2000	
1941	10.91	1971	3.82		

1.005 MACHINERY AND EQUIPMENT DESCRIBED IN SCHEDULE A

The rates in Schedule A reflect typical costs for field installations of component types. These rates apply to each component type regardless of the exact configuration of the system.

The base cost for machinery & equipment described in Schedule A is determined as follows:

1) Select the component category (e.g. Tanks, Steel Bolted),
2) Select the specific component (e.g. Size, Type),
3) Apply the base rate for the specific component.

COMPONENT TYPES

1.010 TANKS

1.010.100 Steel Bolted, Welded, or Pop Tanks - Above Ground

Size		Diameter	Height	Base Rate
8 m^3	50 bbl	2.36m	1.83m	**$7 850**
14 m^3	90 bbl	2.41m	3.05m	**8 700**
16 m^3	100 bbl	2.90m	2.44m	**9 000**
33 m^3	210 bbl	3.05m	4.57m	**12 550**
48 m^3	300 bbl	3.66m	4.57m	**14 650**
64 m^3	400 bbl	3.66m	6.10m	**15 200**
79 m^3	500 bbl Low	6.55m	2.44m	**18 050**
79 m^3	500 bbl High	4.72m	4.88m	**17 100**
119 m^3	750 bbl	4.72m	7.32m	**19 900**
159 m^3	1 000 bbl Low	9.07m	2.44m	**24 400**
159 m^3	1 000 bbl High	6.55m	4.88m	**24 400**
238 m^3	1 500 bbl	6.55m	7.32m	**29 100**
318 m^3	2 000 bbl	9.07m	4.88m	**34 950**
397 m^3	2 500 bbl	9.07m	6.10m	**80 300**
477 m^3	3 000 bbl	9.07m	7.32m	**94 000**
636 m^3	4 000 bbl	10.52m	7.32m	**120 400**
795 m^3	5 000 bbl	11.79m	7.32m	**146 700**
1590 m^3	10 000 bbl	16.76m	7.32m	**259 450**
3179 m^3	20 000 bbl	20.42m	9.75m	**345 800**

Note: 1 barrel (Oil, 42 US Gallons) = 0.158 987 m^3

Rates include: flat bottom, cone deck
flush-type cleanout door
thief hatch and vacuum relief
Standard nozzles, manways and cleanouts
flanges, valves and piping
foundation bands and painting
installation

1.010.200 Stairways - Walkways - Stiles

Stairway	Base Rate per m
4.3 m of rise or less	$ 395
Over 4.3 m of rise	370

Walkways or platforms	Base Rate per m
1.2 m wide metal	$ 280

Stiles	Base Rate
Per stile over berm	$1 050

Rates include: paint and installation

1.010.300 Steel Welded Underground Tanks

Volume			Base Rate
2 505litres	550 gal	16bbl	$7 550
5005litres	1 100 gal	31bbl	7 900
9 810litres	2 156 gal	62bbl	13 400
15 015litres	3 300 gal	94bbl	13 950
25 025litres	5 500 gal	157bbl	23 150
35 035litres	7 700 gal	220bbl	24 800
50 050litres	11 000 gal	315bbl	37 650

Rates include: excavation and backfill
hold downs and concrete
piping, flanges and valves
installation

1.010.400 Tanks - Insulation and Coatings

Insulation / coating type	Base Rate Per m^2
Epoxy internal coating	**$45.50**
50.0 mm Fiberglass, c/w metal cladding	**76.50**
76.0 mm Fiberglass, c/w metal cladding	**89.50**
51.0 mm Urethane for fiberglass tanks c/w 6.35 mm diathon coating	**32.50**
25.0 mm Urethane Insulation, c/w sealer	**45.00**
38.0 mm Urethane Insulation, c/w sealer	**48.00**
50.0 mm Urethane Insulation, c/w sealer	**51.50**
63.0 mm Urethane Insulation, c/w sealer	**56.00**
76.0 mm Urethane Insulation, c/w sealer	**60.00**

Rates include: surface preparation
installation

Note: Use the following formula to find the area of tank to be covered:

Horizontal Tank:

Area = $(2 \times 3.14 \times r^2) + (2 \times 3.14 \times r \times l)$

Vertical Tank:

Area = $(1 \times 3.14 \times r^2) + (2 \times 3.14 \times r \times h)$

Vertical Tank Area = 1 end only and cylinder

where: r = radius
l = length
h = height

1.010.420 Steel Tanks - Fiberglass Insulation

Size	Diameter Height	Base Rate 50 mm Thick
50 Barrel	2.36 m x 1.83 m	**$1 350**
90 Barrel	2.41 m x 3.05 m	**2 100**
100 Barrel	2.90 m x 2.44 m	**2 200**
210 Barrel	3.05 m x 4.57 m	**3 900**
300 Barrel	3.66 m x 4.57 m	**4 800**
400 Barrel	3.66 m x 6.10 m	**6 150**
500 Barrel Low	6.55 m x 2.44 m	**6 400**
500 Barrel High	4.72 m x 4.88 m	**6 850**
750 Barrel	4.72 m x 7.32 m	**9 650**
1000 Barrel Low	9.07 m x 2.44 m	**10 250**
1000 Barrel High	6.55 m x 4.88 m	**10 250**
1500 Barrel	6.55 m x 7.32 m	**14 100**
2000 Barrel	9.07 m x 4.88 m	**15 550**
2500 Barrel	9.07 m x 6.10 m	**18 250**
3000 Barrel	9.07 m x 7.32 m	**20 900**
4000 Barrel	10.52 m x 7.32 m	**25 150**
5000 Barrel	11.79 m x 7.32 m	**29 100**
10000 Barrel	16.76 m x 7.32 m	**46 350**
20000 Barrel	20.42 m x 9.75 m	**72 850**

Size	Diameter Height	Base Rate 76 mm Thick
50 Barrel	2.36 m x 1.83 m	**$1 600**
90 Barrel	2.41 m x 3.05 m	**2 450**
100 Barrel	2.90 m x 2.44 m	**2 600**
210 Barrel	3.05 m x 4.57 m	**4 550**
300 Barrel	3.66 m x 4.57 m	**5 650**
400 Barrel	3.66 m x 6.10 m	**7 200**
500 Barrel Low	6.55 m x 2.44 m	**7 500**
500 Barrel High	4.72 m x 4.88 m	**8 050**
750 Barrel	4.72 m x 7.32 m	**11 300**
1000 Barrel Low	9.07 m x 2.44 m	**12 000**
1000 Barrel High	6.55 m x 4.88 m	**12 000**
1500 Barrel	6.55 m x 7.32 m	**16 500**
2000 Barrel	9.07 m x 4.88 m	**18 200**
2500 Barrel	9.07 m x 6.10 m	**21 350**
3000 Barrel	9.07 m x 7.32 m	**24 450**
4000 Barrel	10.52 m x 7.32 m	**29 400**
5000 Barrel	11.79 m x 7.32 m	**34 000**
10000 Barrel	16.76 m x 7.32 m	**54 200**
20000 Barrel	20.42 m x 9.75 m	**85 250**

Use the following formula to calculate the area covered by the tank:

Area = (1 x 3.14 x r2) + (2 x 3.14 x r x h)
where: r = radius
h = height

1.010.500 Steel Tanks - Urethane Insulation

Size	Diameter Height	Base Rate 25 mm Thickness
50 Barrel	2.36 m x 1.83 m	**$800**
90 Barrel	2.41 m x 3.05 m	**1 250**
100 Barrel	2.90 m x 2.44 m	**1 300**
210 Barrel	3.05 m x 4.57 m	**2 300**
300 Barrel	3.66 m x 4.57 m	**2 850**
400 Barrel	3.66 m x 6.10 m	**3 650**
500 Barrel Low	6.55 m x 2.44 m	**3 750**
500 Barrel High	4.72 m x 4.88 m	**4 050**
750 Barrel	4.72 m x 7.32 m	**5 650**
1000 Barrel Low	9.07 m x 2.44 m	**6 050**
1000 Barrel High	6.55 m x 4.88 m	**6 050**
1500 Barrel	6.55 m x 7.32 m	**8 300**
2000 Barrel	9.07 m x 4.88 m	**9 150**
2500 Barrel	9.07 m x 6.10 m	**10 700**
3000 Barrel	9.07 m x 7.32 m	**12 300**
4000 Barrel	10.52 m x 7.32 m	**14 800**
5000 Barrel	11.79 m x 7.32 m	**17 100**
10000 Barrel	16.76 m x 7.32 m	**27 250**
20000 Barrel	20.42 m x 9.75 m	**42 850**

Size	Diameter Height	Base Rate 38 mm Thickness
50 Barrel	2.36 m x 1.83 m	**$850**
90 Barrel	2.41 m x 3.05 m	**1 350**
100 Barrel	2.90 m x 2.44 m	**1 400**
210 Barrel	3.05 m x 4.57 m	**2 450**
300 Barrel	3.66 m x 4.57 m	**3 050**
400 Barrel	3.66 m x 6.10 m	**3 850**
500 Barrel Low	6.55 m x 2.44 m	**4 050**
500 Barrel High	4.72 m x 4.88 m	**4 300**
750 Barrel	4.72 m x 7.32 m	**6 050**
1000 Barrel Low	9.07 m x 2.44 m	**6 450**
1000 Barrel High	6.55 m x 4.88 m	**6 450**
1500 Barrel	6.55 m x 7.32 m	**8 850**
2000 Barrel	9.07 m x 4.88 m	**9 750**
2500 Barrel	9.07 m x 6.10 m	**11 450**
3000 Barrel	9.07 m x 7.32 m	**13 100**
4000 Barrel	10.52 m x 7.32 m	**15 800**
5000 Barrel	11.79 m x 7.32 m	**18 250**
10000 Barrel	16.76 m x 7.32 m	**29 100**
20000 Barrel	20.42 m x 9.75 m	**45 700**

1.010.500 Steel Tanks - Urethane Insulation - cont'd

Size	Diameter Height	Base Rate 50 mm Thickness
50 Barrel	2.36 m x 1.83 m	**$900**
90 Barrel	2.41 m x 3.05 m	**1 400**
100 Barrel	2.90 m x 2.44 m	**1 500**
210 Barrel	3.05 m x 4.57 m	**2 650**
300 Barrel	3.66 m x 4.57 m	**3 250**
400 Barrel	3.66 m x 6.10 m	**4 150**
500 Barrel Low	6.55 m x 2.44 m	**4 300**
500 Barrel High	4.72 m x 4.88 m	**4 650**
750 Barrel	4.72 m x 7.32 m	**6 500**
1000 Barrel Low	9.07 m x 2.44 m	**6 900**
1000 Barrel High	6.55 m x 4.88 m	**6 900**
1500 Barrel	6.55 m x 7.32 m	**9 500**
2000 Barrel	9.07 m x 4.88 m	**10 500**
2500 Barrel	9.07 m x 6.10 m	**12 250**
3000 Barrel	9.07 m x 7.32 m	**14 050**
4000 Barrel	10.52 m x 7.32 m	**16 950**
5000 Barrel	11.79 m x 7.32 m	**19 600**
10000 Barrel	16.76 m x 7.32 m	**31 200**
20000 Barrel	20.42 m x 9.75 m	**49 050**

Note: Use the following formula to calculate the area covered by the tank:

Area = (1 x 3.14 x r2) ÷ (2 x 3.14 x 4 x h)

where: r = radius
h = height

1.010.600 Fiberglass Tanks - Vertical

Size		Base Rate
14 m^3	90 bbl	**$ 20 150**
33m^3	210 bbl	**25 500**
48m^3	300 bbl	**29 750**
64m^3	400 bbl	**34 100**
80 m^3	500 bbl	**38 350**
119 m^3	750 bbl	**51 550**

1.010.620 Fiberglass Tanks - Underground

Size		Base Rate
$2.3m^3$	14 bbl	**$ 9 400**
$4.6m^3$	29 bbl	**10 200**
$7.9m^3$	50 bbl	**13 050**
$16m^3$	100 bbl	**16 500**
$32m^3$	200 bbl	**26 550**

Rates include: standard manway, nozzles and valves reinforcement installation

1.010.640 Fiberglass Tanks - Insulation

Size		Base Rate
$14m^3$	90 bbl	**$ 900**
$16m^3$	100 bbl	**950**
$33m^3$	210 bbl	**1 650**
$48m^3$	300 bbl	**2 050**
$64m^3$	400 bbl	**2 600**
$80m^3$	500 bbl	**2 750**
$119m^3$	750 bbl	**4 100**

Rates include: 51.0 mm urethane with 6.35 mm Diathon coating preparation and installation

1.010.700 Steel Pop Tanks - Rectangular

Size		Base Rate
$8m^3$	50 bbl	**$ 8 900**
$16m^3$	100 bbl	**10 200**
$33m^3$	210 bbl	**16 350**
$64m^3$	400 bbl	**19 450**

Rates include: painting and steel skids

1.010.720 LPG Steel Tanks

Size		Base Rate
1.9m^3	500 U.S. gal	**$ 3 750**
3.8m^3	1 000 U.S .gal	**6 200**
5.7m^3	1 500 U.S. gal	**18 850**
8m^3	2 000 U.S. gal	**22 650**
19m^3	5 000 U.S. gal	**49 550**
34m^3	9 100 U.S. gal	**55 900**
45m^3	12 000 U.S. gal	**63 200**
68m^3	18 000 U.S. gal	**76 600**
114m^3	30 000 U.S. gal	**96 750**

Rates include: manway, piping and flanges
valves and instrumentation
foundation and installation

Note: one U.S. gallon equals 3.8 litres

Steel ladder and platform	Base Rate each
add	**$3 300**

1.010.800 Steel Chemical Storage Tanks

Size		Base Rate
1365litres	300 Impgal	**$1 550**
2275litres	500 Impgal	**1 700**
4550litres	1000 Impgal	**2 650**

Rates include: painting and installation

1.010.820 Plastic Chemical Storage Tanks

Size		Base Rate
410litres	90 Impgal	**$1 650**
819litres	180 Impgal	**1 800**
910litres	200 Impgal	**1 850**
1 000litres	220 Impgal	**1 900**
1 365litres	300 Impgal	**2 050**
2 275litres	500 Impgal	**2 300**
3 412litres	750 Impgal	**2 950**
4 550litres	1 000 Impgal	**3 150**
6 825litre	1 500 Impgal	**4 150**

Rates include: piping, valves, stand, and straps
installation

1.020 HEATERS, GAUGES, AND SWITCHES

1.020.100 Tank Heaters

kW Rating	BTU	Base Rate
73 kW & smaller	250 000	**$3 300**
147kW	500 000	**3 750**

Rates include: flame arrestor
stack
burning equipment
installation

Note: 3412.14 Btu/hr = 1 kW

1.020.200 Indirect Fired Line Heaters

Rating kW	BTU/H	Diameter	Length	Base Rate
73kW	250 000	610mm	2.3m	**$ 20 600**
147kW	500 000	660mm	3.5m	**23 500**
220kW	750 000	762mm	4.1m	**26 150**
293kW	1 000 000	914mm	4.4m	**30 850**
440kW	1 500 000	1118mm	5.6m	**36 900**
586kW	2 000 000	1219mm	6.6m	**52 450**
879kW	3 000 000	1524mm	7.5m	**66 350**
1172kW	4 000 000	1829mm	8.4m	**87 300**
1465kW	5 000 000	2134mm	8.7m	**127 450**
1758kW	6 000 000	2337mm	8.7m	**169 200**

Rates include: fire tube, burners and pilot
flame arrestor, stack and fuel gas manifold
fuel gas scrubber, ball value, PSV and pressure gauge
values, regulator, temperature controller
high temperature switch, thermometer and expansion drum
thief hatch, gauge glass and insulation
skids and installation

Note: 3412.14 Btu/hr = 1 kW
Direct Heaters are considered obsolete

1.020.300 Tank Gauges

Type	Base Rate
Varec 2500 automatic	**$ 3 150**

Rates include: aluminum gauge head
guide piping, elbows,
brackets and anchor bar
installation

1.020.400 Level Switches

Type	Base Rate
Roof Mount	**$ 1 600**
Static Pressure Sensing	**1 400**

Rates include: electrical
tubing, values and flanges
installation

1.030 TREATERS

1.030.100 Vertical

Diameter		Height		Pressure		Base Rate
1.22m	4ft	6.1m	20ft	345 kPa	50psi	**$51 000**
1.22m	4ft	8.4m	27.5ft	345 kPa	50psi	**56 350**
1.83m	6ft	6.1m	20ft	345 kPa	50psi	**56 950**
1.83m	6ft	8.4m	27.5ft	345 kPa	50psi	**63 250**
2.44m	8ft	6.1m	20ft	345 kPa	50psi	**74 050**
2.44m	8ft	8.4m	27.5ft	345 kPa	50psi	**83 100**
3.05m	10ft	6.1m	20ft	345 kPa	50psi	**86 700**
3.05m	10ft	8.4m	27.5ft	345 kPa	50psi	**98 000**
1.22m	4ft	6.1m	20ft	517 kPa	75psi	**56 300**
1.22m	4ft	8.4m	27.5ft	517 kPa	75psi	**62 350**
1.83m	6ft	6.1m	20ft	517 kPa	75psi	**63 100**
1.83m	6ft	8.4m	27.5ft	517 kPa	75psi	**70 200**
2.44m	8ft	6.1m	20ft	517 kPa	75psi	**82 400**
2.44m	8ft	8.4m	27.5ft	517 kPa	75psi	**92 550**
3.05m	10ft	6.1m	20ft	517 kPa	75psi	**96 800**
3.05m	10ft	8.4m	27.5ft	517 kPa	75psi	**109 500**

Rates include: fire tube, flame arrestor, stack, anodes,
fuel gas system c/w scrubber, thermostats,
regulators and valves
ladder, crowsnest water siphon,
thermometer, pressure gauge, gauge glass,
water outlet valve, oil outlet valve,
oil ,gas and water meters,
gas back pressure valve, relief valve,
insulation, skid, and installation

Note: 6.894757 pound force per square inch = kPa

1.030.200 Mechanical - Horizontal

Diameter		Height		Pressure		Base Rate
1.83m	6ft	6.1m	20ft	345 kPa	50psi	**$113 950**
2.44m	8ft	6.1m	20ft	345 kPa	50psi	**126 950**
2.44m	8ft	7.6m	25ft	345 kPa	50psi	**140 900**
2.44m	8ft	9.1m	30ft	345 kPa	50psi	**188 650**
3.05m	10ft	9.1m	30ft	345 kPa	50psi	**202 050**
3.05m	10ft	12.2m	40ft	345 kPa	50psi	**218 650**
3.05m	10ft	15.2m	50ft	345 kPa	50psi	**233 550**
3.05m	10ft	21.3m	70ft	345 kPa	50psi	**303 100**
1.83m	6ft	6.1m	20ft	517 kPa	75psi	**126 050**
2.44m	8ft	6.1m	20ft	517 kPa	75psi	**139 050**
2.44m	8ft	7.6m	25ft	517 kPa	75psi	**146 950**
2.44m	8ft	9.1m	30ft	517 kPa	75psi	**200 750**
3.05m	10ft	9.1m	30ft	517 kPa	75psi	**214 150**
3.05m	10ft	12.2m	40ft	517 kPa	75psi	**230 750**
3.05m	10ft	15.2m	50ft	517 kPa	75psi	**257 750**
3.05m	10ft	21.3m	70ft	517 kPa	75psi	**327 300**

1.030.300 Electro Static/Dual Polarity - Horizontal

Diameter		Length		Pressure		Base Rate
1.83m	6ft	6.1m	20ft	345 kPa	50psi	**$134 250**
2.44m	8ft	6.1m	20ft	345 kPa	50psi	**147 300**
2.44m	8ft	7.6m	25ft	345 kPa	50psi	**161 250**
2.44m	8ft	9.1m	30ft	345 kPa	50psi	**208 950**
3.05m	10ft	9.1m	30ft	345 kPa	50psi	**228 450**
3.05m	10ft	12.2m	40ft	345 kPa	50psi	**245 050**
3.05m	10ft	15.2m	50ft	345 kPa	50psi	**263 200**
3.05m	10ft	21.3m	70ft	345 kPa	50psi	**332 750**
1.83m	6ft	6.1m	20ft	517 kPa	75psi	**146 350**
2.44m	8ft	6.1m	20ft	517 kPa	75psi	**159 400**
2.44m	8ft	7.6m	25ft	517 kPa	75psi	**167 300**
2.44m	8ft	9.1m	30ft	517 kPa	75psi	**221 050**
3.05m	10ft	9.1m	30ft	517 kPa	75psi	**240 550**
3.05m	10ft	12.2m	40ft	517 kPa	75psi	**257 150**
3.05m	10ft	15.2m	50ft	517 kPa	75psi	**287 400**
3.05m	10ft	21.3m	70ft	517 kPa	75psi	**356 950**

Rates include: fire tube, flame arrestor, stack, anodes,
fuel gas system c/w scrubber, thermostats,
regulators and valves
ladder, crowsnest water siphon,
thermometer, pressure gauge, gauge glass,
water outlet valve, oil outlet valve,
oil ,gas and water meters,
gas back pressure valve, relief valve,
insulation, skid, and installation

Note: Pounds force per sq. inch x 6.894 757 = kPa

1.040 SEPARATORS

1.040.100 Vertical 2-Phase

862 - 1896 kPa (125 psi - 275 psi)

Size Diameter		Height		Base Rate
300mm	12inches	1.5m	5.0ft	**$27 500**
400mm	16 inches	1.5m	5.0ft	**28 150**
500mm	20 inches	1.5m	5.0ft	**28 750**
600mm	24 inches	1.5m	5.0ft	**34 200**
750mm	30 inches	1.5m	5.0ft	**36 250**
900mm	36 inches	1.5m	5.0ft	**38 300**
400mm	16 inches	2.3m	7.5ft	**$28 950**
500mm	20 inches	2.3m	7.5ft	**29 600**
600mm	24 inches	2.3m	7.5ft	**35 200**
750mm	30 inches	2.3m	7.5ft	**37 350**
900mm	36 inches	2.3m	7.5ft	**39 550**
5102 kPa (740 psi)				
400mm	16 inches	1.5m	5.0ft	**$28 750**
500mm	20 inches	1.5m	5.0ft	**29 950**
600mm	24 inches	1.5m	5.0ft	**35 400**
750mm	30 inches	1.5m	5.0ft	**37 600**
10204 kPa (1480 psi)				
400mm	16 inches	1.5m	5.0ft	**$29 200**
500mm	20 inches	1.5m	5.0ft	**30 800**
600mm	24 inches	1.5m	5.0ft	**37 100**
750mm	30 inches	1.5m	5.0ft	**39 550**
400mm	16 inches	2.3m	7.5ft	**29 950**
500mm	20 inches	2.3m	7.5ft	**31 750**
600mm	24 inches	2.3m	7.5ft	**37 850**
750mm	30 inches	2.3m	7.5ft	**40 400**
900mm	36 inches	2.3m	7.5ft	**42 900**

1.040.200 Vertical 3-Phase

862 - 1896 Kpa (125 psi - 275 psi)				
400mm	16 inches	2.3m	7.5ft	**$ 32 700**
500mm	20 inches	2.3m	7.5ft	**33 300**
600mm	24 inches	2.3m	7.5ft	**39 750**
750mm	30 inches	2.3m	7.5ft	**41 900**
900mm	36 inches	2.3m	7.5ft	**44 100**
1200mm	48 inches	2.3m	7.5ft	**49 700**
500mm	20 inches	3.0m	10ft	**34 400**
600mm	24 inches	3.0m	10ft	**41 050**
900mm	36 inches	3.0m	10ft	**45 650**
1200mm	48 inches	3.0m	10ft	**51 400**
1500mm	60 inches	3.0m	10ft	**56 600**
10204 kPa (1480 psi)				
400mm	16 inches	2.3m	7.5ft	**$33 650**
500mm	20 inches	2.3m	7.5ft	**35 500**
600mm	24 inches	2.3m	7.5ft	**42 400**
900mm	36 inches	2.3m	7.5ft	**47 450**
1200mm	48 inches	2.3m	7.5ft	**75 000**
400mm	16 inches	3.0m	10ft	**35 750**
600mm	24 inches	3.0m	10ft	**45 050**
900mm	36 inches	3.0m	10ft	**50 750**
1200mm	48 inches	3.0m	10ft	**80 950**

1.040.300 Horizontal 2-Phase

862 - 1896 kPa (125 psi - 275 psi)				
600mm	24 inches	3.0m	10ft	**$25 650**
750mm	30 inches	3.0m	10ft	**27 800**
900mm	36 inches	3.0m	10ft	**29 900**
10204 kPa (1480 psi)				
500mm	20 inches	3.0m	10ft	**$25 700**
600mm	24 inches	3.0m	10ft	**29 300**
750mm	30 inches	3.0m	10ft	**32 000**
900mm	36 inches	3.0m	10ft	**34 700**

1.040.400 Horizontal 3-Phase

862 - 1896 kPa (125 psi - 275 psi)				
600mm	24 inches	3.0m	10ft	**$32 600**
750mm	30 inches	3.0m	10ft	**34 750**
900mm	36 inches	3.0m	10ft	**36 850**
10204 kPa (1480 psi)				
600mm	24 inches	3.0m	10ft	**$36 250**
750mm	30 inches	3.0m	10ft	**39 000**
900mm	36 inches	3.0m	10ft	**41 700**

Rates include:
liquid dump valves, block valves and fittings
level controllers and high level switch
gas valve pipe and fittings
PSV, pressure gauge and gauge glass
water boot (on 3 Phase horizontal)
senior orifice fitting and meter run
flow recorder
skids and saddles
thermometer and installation

1.040.500 Vertical Centrifugal/Recycling

10204 kPa (1480 psi)				
150mm	6 inches	1.5m	5ft	**$30 850**
200mm	8 inches	1.5m	5ft	**36 700**
300mm	12 inches	1.5m	5ft	**41 900**
400mm	16 inches	2.6m	8.5ft	**51 850**
600mm	24 inches	3.7m	12ft	**90 300**
800mm	32 inches	4.6m	15ft	**114 350**

Rates include:
gas back pressure value and controller
flow recorder and valve manifold
senior orifice fitting and meter run
pressure relief valve
water level controller and gauge
water dump valve and flow meter
temperature and pressure gauges
gas regulators, filter and scrubber
ball valves piping and flanges
installation

Note: Use the following table to cross reference ANSI ratings to working pressure:

WORKING PRESSURE
Service Temperature
-28.9 to 37.8 C (-20 to 100 F)

ANSI	kPa	psi
150	1896	275
300	5102	740
600	10204	1480
900	14893	2160
1500	24821	3600
2500	41369	6000

Pound (force) per square inch x 6.894 757 = kPa

1.040.600 Environmental Low Stage Separator Tank Units

Size	Base Rate
50 barrel	**$46 750**
100 barrel	**71 550**

Rates include:
sand frac flow back vessel
piping and frac tees
75 or 100 mm meter rin
dry flow meter
sand diffuser
ladder, hatches and pad
installation

1.040.700 Pre Fabricated Environmental Battery Units

Low pressure Unit (48kPa)	Lines & Meter Runs	Base Rate
Standard Unit unheated	50mm	**$42 600**
Standard Unit unheated	75mm	**44 250**
Heated Unit	50mm	**47 550**
Heated Unit	75mm	**49 200**
Treating Unit	50mm	**60 750**
Treating Unit	75mm	**62 400**
Companion Storage Tank	**Add each**	**25 400**

Standard Unit
Rates include:
500 barrel used railway oil tank car horizontal separator
high level and high pressure shut off valves
dry flow recorders and fluid level indicators
flow lines, meter, flare lines
100mm x12.2m flare stack, ignition and arrestor
steel skids and saddles
weir plank pad and installation

Heated Unit
Rates include:

250mm fire tube, burner and pilot light
500 barrel used railway oil tank car horizontal separator
high level and high pressure shut off valves
dry flow recorders and fluid level indicators
flow lines, meter, flare lines
100mm x12.2m flare stack, ignition and arrestor
steel skids and saddles
weir plank pad and installation

Treating Unit
Rates include:

degasers and down comers
spreader pan and baffle plates
individual fluid level gauges for oil, gas and water
500 barrel used railway oil tank car horizontal separator
high level and high pressure shut off valves
dry flow recorders and fluid level indicators
flow lines, meter, flare lines
100mm x12.2m flare stack, ignition and arrestor
steel skids and saddles
weir plank pad and installation

Companion Storage Tank
Rate include:

extension of site work, weir, pad and installation
steel skids and saddles
connecting piping to main unit
meters, valves and indicators

High pressure Unit (345kPa)	Lines & Meter Runs	Base Rate
Standard Unit unheated	75mm	**$ 110 050**

Rates include:

500 barrel welded tank, horizontal separator
high level and high pressure shut off valves
dry flow recorders and fluid level indicators
flow lines, meter, flare lines
100mm x12.2m flare stack, ignition and arrestor
steel skids and saddles
weir plank pad and installation

1.050 FUEL GAS SCRUBBERS

	Base Rate
All Sizes	**$ 2 500**

Rates include: block valve, shutoff valve
relief valve and pressure gauge
piping and high level switch
installation

1.060 FREE WATER KNOCKOUTS

Diameter		Length		Base Rate
1.83m	6 ft	3.0m	10 ft	**$105 450**
1.83m	6 ft	4.6m	15 ft	**111 500**
2.44m	8 ft	4.6m	15 ft	**123 600**
3.05m	10 ft	6.1m	20 ft	**150 150**
3.05m	10 ft	9.1m	30 ft	**162 250**
3.05m	10 ft	12.2m	40 ft	**237 800**

Rates include: dump valve
block valve
pipe fittings and flanges
level controllers
gas back pressure valve
gauge glass and pressure gauge
PSV and thermometer
skids and installation

1.070 GAS BOOTS

Diameter		Base Rate
600mm	24 inches	**$ 28 700**
750mm	30 inches	**31 500**
900mm	36 inches	**33 500**
1 050mm	42 inches	**38 050**
1 200mm	48 inches	**40 600**
1 500mm	60 inches	**45 950**

Rates include: guy wires
pressure gauge, PSV and block valve
piping, flanges and fittings
steel caged ladder and top platform
foundation and installation

Note: Average heights used are 9,1 to 12.2m (30 to 40 feet)

1.080 FLARE SYSTEMS

1.080.100 Vent Stacks 100 mm (4") Stack

Height		Base Rate
9.1 m	30ft	**$ 11 050**
12.2 m	40ft	**11 250**
15.2 m	50ft	**11 650**
18.3 m	60ft	**15 250**

1.080.120 Vent Stacks 150 mm (6") Stack

Height		Base Rate
9.1 m	30ft	**$ 14 250**
12.2 m	40ft	**14 500**
15.2 m	50ft	**14 850**
18.3 m	60ft	**16 200**

1.080.140 Vent Stacks 203 mm (8") Stack

Height		Base Rate
9.1 m	30ft	**$ 17 500**
12.2 m	40ft	**17 750**
15.2 m	50ft	**18 100**
18.3 m	60ft	**20 750**

1.080.200 Flare Stacks Pilot & Shottube 100 mm (4") Stack

Height		Base Rate
9.1 m	30ft	$ 13 200
12.2 m	40ft	13 450
15.2 m	50ft	13 950
18.3 m	60ft	17 700

1.080.220 Flare Stacks Pilot & Shottube 150 mm (6") Stack

Height		Base Rate
9.1 m	30ft	$ 16 450
12.2 m	40ft	16 650
15.2 m	50ft	17 150
18.3 m	60ft	19 700

1.080.240 Flare Stacks Pilot & Shottube 200 mm (8") Stack

Height		Base Rate
9.1 m	30ft	$ 19 650
12.2 m	40ft	19 900
15.2 m	50ft	20 650
18.3 m	60ft	23 150

1.080.300 Flare Stacks - Manual or Automatic or Solar Ignitor 100 mm (4") Stack

Height		Base Rate
9.1 m	30ft	$ 15 300
12.2 m	40ft	15 950
15.2 m	50ft	16 550
18.3 m	60ft	20 500

1.080.320 Flare Stacks - Manual or Automatic or Solar Ignitor 150 mm (6") Stack

Height		Base Rate
9.1 m	30ft	$ 18 550
12.2 m	40ft	19 150
15.2 m	50ft	19 750
18.3 m	60ft	22 550

1.080.340 Flare Stacks - Manual or Automatic or Solar Ignitor
200 mm (8") Stack

Height		Base Rate
9.1 m	30ft	**$ 21 800**
12.1 m	40ft	**22 400**
15.2 m	50ft	**23 350**
18.2 m	60ft	**26 000**

Rates include:
flare tips
base and foundation
piping and flange
regulator, valve and gauge
retractable assembly
electric service, flame failure switch
guy wires and installation

1.080.500 Incinerators

Height		Base Rate
14.3m	47ft	**$ 87 350**
15.2m	50ft	**90 150**
18.3m	60ft	**99 350**
21.3m	70ft	**108 500**
24.4m	80ft	**117 700**
27.4m	90ft	**126 900**
28.6m	94ft	**130 600**

Rates include:
stack, guy wires and incinerator
piping and flange
electric ignition and switch
base and installation

1.090 COMPRESSORS

1.090.100 Vapour Recovery - Blower

Size		Base Rate
1.5 kW	2hp	**$ 12 500**
3.7 kW	5hp	**19 750**
7.5 kW	10hp	**29 600**

1.090.200 Vapour Recovery - Single Stage

Size		Base Rate
3.7 kW	5hp	**$ 40 000**
11.0 kW	15hp	**50 200**
18.7 kW	25hp	**68 050**
37.3 kW	50hp	**82 700**
74.6 kW	100hp	**119 900**
111.9 kW	150hp	**160 550**

1.090.300 Vapour Recovery - Two Stage

Size		Base Rate
11.0 kW	15hp	**$ 76 050**
18.7 kW	25hp	**88 650**
37.3 kW	50hp	**120 850**
56.0 kW	75hp	**156 700**
74.6 kW	100hp	**192 750**
93.3 kW	125hp	**202 600**
111.9 kW	150hp	**212 150**

Rates include:
compressor package
inlet separator
piping, flanges and fittings
controls
lube system
skids and installation

Horse power (electric) x 0.746 = kW

1.090.400 Gas Compressors - Two Stage
Electric Drive - Packaged

Size		Base Rate
14.9	20hp	**$ 95 800**
37.3	50hp	**96 300**
44.8	60hp	**152 550**
74.6	100hp	**157 700**
93.3	125hp	**182 700**
149.2	200hp	**195 100**
223.8	300hp	**263 700**

ADD additional stages **each** **$ 30 250**

Rates include:
compressor package
discharge air exchanger each stage
suction scrubber
controls, control panel
electrical and switches
electric motor and drive
piping, flanges and fittings
skids and installation

1.090.500 Gas Compressors - Two Stage

Gas Drive - Packaged

Size		Base Rate
14.9 kW	20hp	**$ 112 700**
37.3 kW	50hp	**112 700**
44.8 kW	60hp	**179 450**
74.6 kW	100hp	**189 050**
93.3 kW	125hp	**212 550**
149.2 kW	200hp	**244 850**
223.8 kW	300hp	**331 000**

ADD additional stages **Each** **$ 30 250**

Rates include:
compressor package
discharge air exchanger each stage
suction scrubber
controls, control panel and switches
gas motor and drive
piping, flanges and fittings
skids and installation

1.100 PUMPS

1.100.100 Vertical Turbine Pumps

Inlet		Motor		Base Rate
100 mm	4 inch	1.5 kW	2 hp	**$ 7 600**
100 mm	4 inch	2.2 kW	3 hp	**7 900**
100 mm	4 inch	3.7 kW	5 hp	**8 750**
100 mm	4 inch	5.6 kW	7.5 hp	**9 900**
150 mm	6 inch	2.2 kW	3 hp	**8 150**
150 mm	6 inch	3.7 kW	5 hp	**9 300**
150 mm	6 inch	5.6 kW	7.5 hp	**10 300**
150 mm	6 inch	7.5 kW	10 hp	**10 700**
150 mm	6 inch	11.2 kW	15 hp	**12 050**
150 mm	6 inch	14.9 kW	20 hp	**13 400**
150 mm	6 inch	18.7 kW	25 hp	**13 900**
150 mm	6 inch	22.4 kW	30 hp	**15 250**

Rates include:
pump and base plate
explosion proof electric motor and drive assembly
piping, couplings, flanges and valves
electrical service and motor switch
installation

1.100.200 Centrifugal Pumps - End Suction

Inlet		Motor		Base Rate
38 mm	1.5 inch	1.5 kW	2.0 hp	**$ 6 050**
38 mm	1.5 inch	2.2 kW	3.0 hp	**6 200**
38 mm	1.5 inch	3.7 kW	5.0 hp	**6 300**
75 mm	3.0 inch	1.5 kW	2.0 hp	**6 200**
75 mm	3.0 inch	2.2 kW	3.0 hp	**6 350**
75 mm	3.0 inch	3.7 kW	5.0 hp	**6 450**
100 mm	4.0 inch	2.2 kW	3.0 hp	**8 450**
100 mm	4.0 inch	3.7 kW	5.0 hp	**8 600**
100 mm	4.0 inch	5.6 kW	7.5 hp	**8 850**
100 mm	4.0 inch	7.5 kW	10.0 hp	**9 500**
100 mm	4.0 inch	11.2 kW	15.0 hp	**10 300**

Rates include: pumps and base plates
explosion proof motor and drive assembly
piping, couplings, flanges and valves
electrical service and motor switch installation

1.100.300 Centrifugal Pumps - Vertical Inline

Inlet		Motor		Base Rate
50 mm	2.0 inch	1.5 kW	2.0 hp	**$ 6 650**
50 mm	2.0 inch	2.2 kW	3.0 hp	**6 800**
50 mm	2.0 inch	3.7 kW	5.0 hp	**6 900**
75 mm	3.0 inch	1.5 kW	2.0 hp	**6 900**
75 mm	3.0 inch	2.2 kW	3.0 hp	**7 050**
75 mm	3.0 inch	3.7 kW	5.0 hp	**7 150**
100 mm	4.0 inch	2.2 kW	3.0 hp	**9 500**
100 mm	4.0 inch	3.7 kW	5.0 hp	**9 650**
100 mm	4.0 inch	5.6 kW	7.5 hp	**9 900**
100 mm	4.0 inch	7.5 kW	10.0 hp	**10 600**
100 mm	4.0 inch	11.2 kW	15.0 hp	**11 600**

Rates include: pumps and base plates
explosion proof motor and drive assembly
piping, couplings, flanges and valves
electrical service and motor switch installation

1.100.400 Rotary Gear Pumps

Inlet		Motor		Base Rate
38 mm	1.5 inch	1.5 kW	2.0 hp	**$ 5 250**
38 mm	1.5 inch	2.2 kW	3.0 hp	**5 400**
38 mm	1.5 inch	3.7 kW	5.0 hp	**5 500**
63 mm	2.5 inch	1.5 kW	2.0 hp	**7 250**
63 mm	2.5 inch	2.2 kW	3.0 hp	**7 400**
63 mm	2.5 inch	3.7 kW	5.0 hp	**7 500**
75 mm	3.0 inch	7.5 kW	10.0 hp	**8 250**
75 mm	3.0 inch	11.2 kW	15.0 hp	**8 800**

Rates include:
pump, base plates and mechanical seal
explosion proof motor and drive assembly
piping, couplings and flanges
valves and PSV
electrical service and motor switch
paint and installation

1.100.500 Progressive Cavity Pumps

Inlet		Motor		Base Rate
50 mm	2.0 inch	1.5 kW	2.0 hp	**$ 8 250**
63 mm	2.5 inch	2.2 kW	3.0 hp	**9 150**
75 mm	3.0 inch	2.2 kW	3.0 hp	**10 000**
100 mm	4.0 inch	3.7 kW	5.0 hp	**14 200**
150 mm	6.0 inch	5.6 kW	7.5 hp	**15 900**
150 mm	6.0 inch	7.5 kW	10.0 hp	**16 150**
150 mm	6.0 inch	11.2 kW	15.0 hp	**16 700**

Rates include:
pump, base plates and mechanical seal
steel rotor and stator, pin joints
explosion proof motor, drive assembly and guard
piping, couplings and flanges
valves and PSV
electrical service and motor switch
paint and installation

1.100.600 Piston / Plunger Pumps

Type	Motor		Base Rate
Simplex	3.7 kW	5 hp	**$ 8 400**
Duplex	7.5 kW	10 hp	**11 950**
Triplex	11.2 kW	15 hp	**12 750**
Triplex	22.4 kW	30 hp	**22 250**
Triplex	37.3 kW	50 hp	**26 150**
Triplex	74.6 kW	100 hp	**40 900**
Quintuplex	22.4 kW	30 hp	**24 550**
Quintuplex	37.3 kW	50 hp	**29 750**
Quintuplex	56.0 kW	75 hp	**41 600**
Quintuplex	74.6 kW	100 hp	**49 300**
Quintuplex	186.5 kW	250 hp	**124 700**

Rates include:
pump, base plates and mechanical seal
explosion proof motor, drive assembly and guard
piping, couplings and flanges
valves and PSV
electrical service and motor switch
paint and installation
equipment skids for 30 H.P. and larger

1.100.700 Waterflood Pumps

Type	Motor		Base Rate
Triplex	22.4 kW	30 hp	**$ 29 950**
Triplex	44.8 kW	60 hp	**36 000**
Triplex	74.6 kW	100 hp	**56 200**
Triplex	123.1 kW	165 hp	**79 250**
Triplex	149.2 kW	200 hp	**91 400**
Triplex	279.8 kW	375 hp	**231 500**
Quintuplex	186.5 kW	250 hp	**122 150**
Quintuplex	223.8 kW	300 hp	**146 800**
Quintuplex	373.0 kW	500 hp	**275 950**
Quintuplex	466.3 kW	625 hp	**298 850**

Rates include:
pump, base plates and mechanical seal
explosion proof motor, drive assembly and guard
piping, couplings and flanges
valves and PSV
electrical service and motor switch
paint and installation
equipment skids for 30 H.P. and larger

Note: Horse power (electric) x 0.746 = 1 kW

1.110 AIR COMPRESSORS

1.110.100 Utility Air Compressors

Size		Base Rate
1.5 kW	2.0 hp	**$ 4 950**
3.7 kW	5.0 hp	**5 550**
7.5 kW	10.0 hp	**7 350**
11.2 kW	15.0 hp	**8 000**

Rates include:
reciprocating compressor
lubricated, 2 stage
air receiver and motor
electrical and switch
piping, flange and installation

1.110.200 Instrument Air Compressors - Reciprocating

Size		Base Rate
3.7 kW	5.0 hp	**$ 10 050**
7.5 kW	10.0 hp	**12 150**
11.2 kW	15.0 hp	**14 900**

Rate includes:
reciprocating compressor
air receiver and electric motor
electrical and switch
after cooler, air dryer package
piping, flange and installation

1.110.300 Instrument Air Compressors - Rotary Screw

Size		Base Rate
11.2 kW	15.0 hp	**$ 17 950**
18.7 kW	25.0 hp	**22 900**
37.3 kW	50.0 hp	**34 100**
74.6 kW	100.0 hp	**57 300**

Rate includes:
lubricated oil injection compressor
receiver and electric motor
electrical and switch
oil separator with pump
after cooler, air dryer package
piping, flange and installation

1.120 CHEMICAL INJECTORS

1.120.100 Electric Drive

Single Head - 6 mm

Motor		Phases	Base Rate
0.19 kW	0.25 hp	1	**$ 2 200**
0.19 kW	0.25 hp	3	**3 400**
0.37 kW	0.50 hp	1	**2 300**
0.37 kW	0.50 hp	3	**3 500**

Two Heads - 6 mm

Motor		Phases	Base Rate
0.19 kW	0.25 hp	1	**$ 2 450**
0.19 kW	0.25 hp	3	**3 600**
0.37 kW	0.50 hp	1	**2 500**
0.37 kW	0.50 hp	3	**3 700**

Rates include: pump and base
electric motor and service
tubing
installation

1.120.200 Air/Gas Drivers

Plunger Size		Base Rate
6 mm	0.25 inch	**$ 2 800**
12 mm	0.50 inch	**2 800**
19 mm	0.75 inch	**2 950**
25 mm	1.00 inch	**3 000**
31 mm	1.25 inch	**3 400**

Rate includes: pump and base
tubing, couplings
installation

1.120.300 Oscillamatic

Size	Base Rate
All sizes	**$ 1 900**

1.130 CONTROL VALVES

1.130.100 Emergency Shutdown Valves (ESD's)

Type	Size		Base Rate
WKM Ball Valve	60 mm	2 inch	**$ 2 950**
	89 mm	3 inch	**4 200**
	114 mm	4 inch	**6 700**
	168 mm	6 inch	**11 200**

Rates include: valve and actuator
high/low pressure pilot switch
flanges and tubing
installation

1.130.200 2-Way Pneumatic Valves

Valve size		ANSI size	Actuator size	Base Rate
25 mm	1.0 inch	Level	Control Valve	**$1 900**
25 mm	1.0 inch	NPT	30	**3 300**
25 mm	1.0 inch	300	30	**3 750**
25 mm	1.0 inch	600	30	**3 800**
38 mm	1.5 inch	NPT	34	**3 950**
38 mm	1.5 inch	300	34	**4 450**
38 mm	1.5 inch	600	34	**4 600**
50 mm	2.0 inch	300	40	**5 050**
50 mm	2.0 inch	600	45	**5 300**
75 mm	3.0 inch	300	45	**6 950**
75 mm	3.0 inch	600	45	**7 000**
100 mm	4.0 inch	300	45	**8 700**
100 mm	4.0 inch	600	45	**8 950**
150 mm	6.0 inch	300	70	**15 150**
150 mm	6.0 inch	600	70	**15 800**

Note: 3 - Way Pneumatic Valves are considered obsolete

Rates include: valve and actuator
level controller and pilot switch
flanges and tubing
installation

2 - Way Electric - valve actuation **add** **$170**
3 - Way Electric - valve actuation **add** **$280**

1.130.300 Intermitter - Time Cycle Controller

Size	Base Rate
51 mm	$ 4 440
76 mm	5 480
102 mm	6 620
152 mm	10 120

1.140 CHOKES

1.140.100 Wellhead/Manifolds - Willis Manual

Size		Model	Base Rate
33 mm	1 inch	M-1A	$ 1 200
60 mm	2 inch	M-2	2 450
89 mm	3 inch	M-3	5 350
114 mm	4 inch	M-4	5 800

Rates include: installation

1.140.200 Wellhead Manifolds - Master Flo Manual

Size		Model	Base Rate
33 mm	1 inch	P-1	$ 1 800
60 mm	2 inch	P-2	2 450
89 mm	3 inch	P-3	4 550
114 mm	4 inch	P-4	13 750
168 mm	6 inch	P-6	29 350

Rates include: installation

1.140.300 Wellhead/Manifolds - Willis Pneumatic

Size		Model	Base Rate
33 mm	1 inch	M-1A	$ 3 200
60 mm	2 inch	PA-2	4 450
89 mm	3 inch	M-3	8 150
114 mm	4 inch	M-4	8 900
Pressure Controller		**add**	$ 2 120

Rates include: valve and actuator
tubing and flanges
installation

1.140.400 Wellhead/Manifolds - Master Flo Pneumatic

Size		Model	Base Rate
33 mm	1 inch	P-1	**$ 3 300**
60 mm	2 inch	P-2	**4 350**
89 mm	3 inch	P-3	**8 750**
114 mm	4 inch	P-4	**19 150**
168 mm	6 inch	P-6	**34 700**
Pressure Controller		**add**	**$ 2 120**

Rates include: valve and actuator
tubing and flanges
installation

1.150 ORIFICE FITTING AND METER RUNS

1.150.100 Senior

Size		Base Rate
60 mm	2 inch	**$ 4 750**
89 mm	3 inch	**5 200**
114 mm	4 inch	**5 950**
168 mm	6 inch	**7 450**
219 mm	8 inch	**10 250**
273 mm	10 inch	**13 000**

Rates include: orifice fittings, plate and holder
meter run and flanges
tubes and couplings
installation

1.150.200 Simplex

Size		Base Rate
60 mm	2 inch	**$ 1 700**
89 mm	3 inch	**2 000**
114 mm	4 inch	**2 600**
168 mm	6 inch	**3 650**
219 mm	8 inch	**6 200**
273 mm	10 inch	**8 850**

Rates include: orifice fittings and plate
meter run and flanges
plate holder
tubes and couplings
installation

1.160 METERING AND ANALYSIS

1.160.100 Mechanical liquid meters

Type		Size	Base Rate
Barton FL 10	33 mm	1.0 inch	**$ 1 550**
Barton Flotrac 306	33 mm	1.0 inch	**1 050**
Barton Flotrac 380	33 mm	1.0 inch	**1 050**
Floco F-2500	33 mm	1.0 inch	**1 750**
Floco 382 NPT	60 mm	2.0 inch	**5 250**
Floco 382 600 ANSI	60 mm	2.0 inch	**6 950**
Floco 383 NPT	89 mm	3.0 inch	**5 250**
Floco 383 600 ANSI	89 mm	3.0 inch	**7 650**

Automatic Sampler - sweet service **add** **$ 1 260**
Automatic Sampler - sour service **add** **$ 1 410**

Rates include: valves
pipe and fittings
installation

Note: The above meters are positive displacement meters for the measurement of brine, production water and oil production. Model FL 10 is a flow meter.

1.160.200 Mechanical Gas Meters

Type	Size		Base Rate
Dresser Roots	48 mm	1.5 inch	**$ 2 000**
Dresser Roots	60 mm	2.0 inch	**2 450**

Rates include: pipe and fittings
installation

1.160.300 Liquid Turbine Meters

Type	Size		Base Rate
Smith Watchman	27 mm	0.75 inch	**$ 1 950**
Smith Watchman	33 mm	1.00 inch	**2 200**
Smith Guardsman	48 mm	1.50 inch	**3 950**
Smith Guardsman	60 mm	2.00 inch	**3 950**
Smith Guardsman	89 mm	3.00 inch	**4 750**
Halliburton	10-51 mm	0.38-2.00 inch	**1 000**
Halliburton	76 mm	3.00 inch	**2 150**
Halliburton	102 mm	4.00 inch	**2 900**

Rates include: pipe and fittings
electrical
installation

1.160.400 Totalizers and Analyzers

Type	Base Rate
CMOS CTC - 61 Totalizer	**$ 4 350**
Halliburton LO - 11 Totalizer	**1 100**
Halliburton MC - 11 Analyzer	**1 250**
Halliburton Net Oil Analyzer	**4 900**

Rates include: remote panel mounted installation

Note: Totalizers are used with turbine meters.
Analyzers are used a probe to measure water in an oil stream

1.160.500 Capacitance Probes

Size		Base Rate
60 mm	2 inch	**$ 3 650**
89 mm	3 inch	**4 950**
114 mm	4 inch	**5 700**

Rates include: probe and electric cable installation

1.160.600 Chart Recorders

Type	Base Rate
2 Pen Circular - 6900 kPa element	**$ 3 100**
3 Pen Circular - 6900 kPa element	**3 650**

Rates include: tubing, valves and manifold
pressure element
temperature element
spring chart drive
installation

1.160.700 Transmitters

Type	Base Rate
Differential Pressure Flow	**$ 2 250**
Pressure	**1 650**
Temperature	**1 100**

Rates include: electrical installation

Note: Rates are for Barton, Rosemount or Foxboro types

1.170 PRODUCTION MANIFOLDS

1.170.100 Manual - Per Well

Size		Base Rate
60 mm	2 inch	**$ 8 000**
89 mm	3 inch	**10 400**
114 mm	4 inch	**12 000**
168 mm	6 inch	**16 000**

Rates include: **piping and fittings to headers per well**
three valves per well
inlet, test, pigging and group headers per well
installation

Note: To determine the total cost of a multiwell manual manifold, multiply the cost per well (above) by the number of wells entering the manifold.

1.170.200 Rotary Selector Valve

Type	Base Rate
Rotary Selector Valve	**$ 6 150**
60 mm (2") Inlets - **per well, add**	**1 900**
Electric auto - actuator **add**	**3 750**

Rates include: piping and fittings to rotary valve - per well
piping from rotary to test header - per well
valves - per well
installation

Note: To determine the total cost of a rotary selector manifold multiply the inlet manifold cost per well by the number of wells entering the rotary valve. Add this cost to the cost of a rotary selector valve and add the cost of an auto - actuator if found.

Example:

Rotary Valve Manifold - 5 Wells		
5 well inlet manifolds @ $ 1 900	=	$ 9 500
1 Rotary Selector Valve	=	$ 6 150
1 Electric auto - actuator	=	$ 3 750
Total Manifold Cost	=	$19 400

1.180 PIGGING EQUIPMENT

1.180.100 Pig Launcher/Receiver Traps

Size		Base Rate
60 mm	2 inch	**$ 5 000**
89 mm	3 inch	**5 200**
114 mm	4 inch	**6 650**
168 mm	6 inch	**12 100**
219 mm	8 inch	**13 150**

Rates include: inlet, outlet and bypass valves
bleed valve and bypass
piping and fittings
structural support
installation

1.180.200 Pig Entry Tees

Size		Base Rate
60 mm	2 inch	**$ 2 150**
89 mm	3 inch	**2 250**
114 mm	4 inch	**2 550**

Rates include: block valves each side
bleed valve
installation

1.180.300 Pig Ball Valves - Manual Injectors

Size		Base Rate
60 mm	2 inch	**$ 2 650**
89 mm	3 inch	**3 250**
114 mm	4 inch	**5 450**
168 mm	6 inch	**12 700**

Rates include: bleed valve
installation

1.190 ELECTRICAL SERVICES

1.190.100 General Service Entrance To Site

	Base Rate
Single Phase Service, 120/240V, 101A to 200A	$ 2 780
Three Phase Service, 480V, 201A to 400A	7 820
Three Phase Service, 480V, 401A to 800A	14 850

Rates include: circuit panel, main disconnect, branch circuit breakers, splitter, disconnects and grounding trenching, cable, miscellaneous and installation

A Sub-Station Transformer is required to step - down a 480 Volt service to circuits of 460 Volt 3 Phase for motors and circuits of Single Phase 120/208 Volts for buildings, lights, etc.

A Sub-Station Transformer may be located inside a building or at an exterior plywood shelter and are found in association with electrical vaults, panels and switching gear.

Rates do not include: service and wiring costs of a building fixtures, switches and receptacle costs

1.190.200 Service for Buildings

	Base Rate
Basic Service, per building	$ 2 150

Rates include: service wiring to treater, compressor, separator or similar buildings
conduit and fittings
materials and installation

1.190.400 Thermo - Electric Generators

Unit	Base Rate
Less than 40W	**$ 5 200**
over 40W	**9 750**

1.190.500 Remote System Radio Towers

Self - Supporting Height		Base Rate
8.5 m	28 ft	**$ 1 550**
11.0 m	36 ft	**2 050**
13.4 m	44 ft	**2 550**
16.5 m	54 ft	**3 050**
20.7 m	68 ft	**3 500**

Radio Antennas - building mounted antenna **$ 420**

1.190.600 Fire and Gas Detection Systems

		Base Rate
Fire detection controller		**$ 4 500**
Fire detector heads	**add each**	**2 000**
Gas detection controller		**2 200**
Gas detector heads	**add each**	**1 250**
Horn		**350**
Warning lights	**add each**	**500**

1.230 DEHYDRATORS

1.230.100 Calcium Chloride Dryers

Diameter		Height		Base Rate
300 mm	12 inch	8.2 m	27 ft	**$ 12 850**
400 mm	16 inch	8.2 m	27 ft	**15 550**
500 mm	20 inch	8.2 m	27 ft	**17 250**
600 mm	24 inch	8.2 m	27 ft	**22 000**
750 mm	30 inch	8.2 m	27 ft	**25 550**

Pellet loading arm assembly **add** **$ 2 780**
Meter run and dry flow recorder **add as found**

Rates include: vessel with integral scrubber
calcium chloride pellets
600 mm (24 inch) bed of glass beads
scrubber heating coil
dump valve, piping and flanges
fuel gas scrubber with controls
installation

1.230.200 Glycol Dehydrator Package

2 PHASE

Diameter		Height		Base Rate
300 mm	12 inch	4.3 m	14 ft	**$ 50 400**
400 mm	16 inch	4.3 m	14 ft	**57 200**
500 mm	20 inch	4.3 m	14 ft	**67 750**
600 mm	24 inch	4.3 m	14 ft	**73 350**
750 mm	30 inch	4.3 m	14 ft	**79 400**

Meter Run and dry flow recorder - **add as found**

Rates include: 4 tray vessel and 2 phase integral scrubber
glycol regenerator including reboiler
glycol/glycol exchanger
fire tube, flame arrestor, burner and pilot assembly
fuel gas scrubber and control package
standard dehydrator instrument package
glycol pump, piping, fittings, tubing and valves
process piping, controllers, gauges and glass
installation

1.230.300 Glycol Dehydrator Package Options

The following costs should be added to the glycol dehydrator rates found under Sections 6.230.200 and 6.230.300

ADDITIONAL TRAYS

Vessel Diameter		Rate/Tray
300 mm	12 inch	**$ 580**
400 mm	16 inch	**810**
500 mm	20 inch	**990**
600 mm	24 inch	**1 090**
750 mm	30 inch	**1 820**

Note: Each additional 450 mm (18 inch) of vessel height above 4.3 m (14 feet) is assumed to contain one tray. Vessel heights are measured from seam to seam.

THIRD PHASE ADDITION

Vessel Diameter		Rate
300 mm	12 inch	**$ 3 050**
400 mm	16 inch	**3 150**
500 mm	20 inch	**3 450**
600 mm	24 inch	**3 750**
750 mm	30 inch	**4 100**

Note: The above rates add for a third phase to the scrubber and add controls also.

STANDBY GLYCOL PUMP ADDITION

Vessel Diameter		Rate
300 mm	12 inch	**$ 4 100**
400 mm	16 inch	**4 100**
500 mm	20 inch	**4 900**
600 mm	24 inch	**4 900**
750 mm	30 inch	**6 650**

Note: The above rates add for a standby glycol pump complete with piping and valves.

1.240 FILTERS

1.240.100 Peco Liquid Filters

Diameter		Height		Base Rate
168 mm	6.6 inch	787 mm	31 inch	**$ 1 800**
168 mm	6.6 inch	1168 mm	46 inch	**1 900**
219 mm	8.6 inch	813 mm	32 inch	**2 150**
219 mm	8.6 inch	1422 mm	56 inch	**2 350**

Rates include: block valve and bypass valves
drain valve
piping and fittings
installation

1.240.200 Peco Gas Filter Separations

Diameter		Height		Base Rate
168 mm	6.6 inch	1 391 mm	55 inch	**$ 4 450**
168 mm	6.6 inch	1 772 mm	70 inch	**4 600**
168 mm	6.6 inch	2 002 mm	79 inch	**4 750**
219 mm	8.6 inch	2 178 mm	86 inch	**6 900**

Rate include: block valves, bypass valve
drain valve
piping and fittings
installation

1.240.300 Peco Dry Gas Filters

Diameter		Height		Base Rate
168 mm	6.6 inch	660 mm	26 inch	**$ 3 500**
168 mm	6.6 inch	1 041 mm	41 inch	**3 700**
168 mm	6.6 inch	1 270 mm	50 inch	**3 950**

Rate include: block valves, bypass valve
drain valve
piping and fittings
installation

Note: No instrumental or PSV's have been included in any of the rates. Filters may be applied in the removal of particles and liquid separation such as hydrocarbon fluids, glycols, process fluids, salt water, fresh water, and water solutions as well as filtering and separating gases. Filter pressure vessels can be vertical or horizontal with removable end closures.

1.250 LACT UNITS

1.250.100 60 mm and 89 mm Piping Units

Pump Size		Base Rate
7.5 kW	10 hp	**$ 47 350**
11.2 kW	15 hp	**54 750**
14.9 kW	20 hp	**63 400**
18.6 kW	25 hp	**76 750**
22.4 kW	30 hp	**85 000**
29.8 kW	40 hp	**107 000**
37.3 kW	50 hp	**145 700**
74.6 kW	100 hp	**151 750**

1.250.200 114 mm Piping Units

Pump Size		Base Rate
7.5 kW	10 hp	**$ 49 450**
11.2 kW	15 hp	**56 850**
14.9 kW	20 hp	**65 500**
18.6 kW	25 hp	**78 800**
22.4 kW	30 hp	**87 100**
29.8 kW	40 hp	**107 650**
37.3 kW	50 hp	**146 350**
74.6 kW	100 hp	**152 350**

Rates include:
skids and foundation
piping, valves and fittings
suction strainer, sampler
BS & W monitor, temperature indicator
charge pump and motor
shipping pump and motor
divert valve and metering
low pressure switch, motor switches
vibration switch, PSV
high discharge pressure switch
discharge pressure transmitter
electrical, controls and panels
installation

Note: 1 HP = 0.7460 kW
LACT Units found with pump sizes exceeding kW (100H.P.) should be considered as special installations and costs obtained.

2.000 SCHEDULE B - ASSESSMENT YEAR MODIFIERS

The following assessment year modifiers are for machinery and equipment described in the Alberta Machinery and Equipment Assessment Manual.

Assessment Year	Assessment Year Modifier
1998	1.10
1999	1.14

3.000 SCHEDULE C - DEPRECIATION

Depreciation factors for machinery and equipment described in the Alberta Machinery and Equipment Assessment Manual is listed in Table 2 - Depreciation Factors. Depreciation for machinery and equipment that is not described in the manual shall be determined in a manner that is fair and equitable with the depreciation factors listed in Table 2.

The anticipated age life for machinery and equipment described in Schedule A is 20 years. The anticipated age life for machinery and equipment located in specific classes of property is listed in Table 1.

"age " means the chronological age or the effective age, in years

“effective age” means the estimated age of machinery and equipment based on its present condition, design features and engineer amenities. Effective age may be less than, equal to, or greater than actual age. Effective age is determined by examining the present condition, design features and engineer amenities of comparable types of machinery and equipment.

TABLE 1 - ANTICIPATED AGE LIFE

CLASS OF PROPERTY	ANTICIPATED AGE LIFE OF M & E
Acid Plant	**20 years**
Brewery	**25 years**
Brick Plant	**25 years**
Cannery	**20 years**
Chemical Plant	**20 years**
Cement Plant	**20 years**
Coal Processing Plant	**20 years**
Distillery	**25 years**
Dairy, Creamery	**25 years**
Enhanced Oil Recovery	**15 years**
Feed or Flour Mill	**25 years**
Gas Processing (including sour gas)	**20 years**
Gas Injection or Compression	**20 years**
Insulation Plant	**20 years**
Meat Packing Plant	**25 years**
Methanol Plant	**15 years**
Oil Sand Processing Plant	**15 years**
Oilfield Battery	**20 years**
Plywood/OSB*/Wallboard Manufacturing Plant	**20 years**
Pulp Mill	**15 years**
Pelitizing Plant (Feed)	**20 years**
Refinery (Metal)	**15 years**
Refinery (Oil)	**20 years**
Refinery (Sugar)	**20 years**
Roofing Plant	**20 years**
Saw or Stud Mill	**20 years**
Seed Cleaning Plant	**25 years**
Soft Drink Plant	**20 years**
Steel Mill	**20 years**
Sulphur or Fertilizer Plant	**15 years**
Tire Plant	**15 years**
Water Flood	**20 years**

*OSB - Oriented Strand Board

TABLE 2 - DEPRECIATION FACTORS
(Expressed as Percentage Remaining)

	Anticipated Age Life					
Age (Years)	**10 Years**	**15 Years**	**20 Years**	**25 Years**	**30 Years**	**35 Years**
0	75	75	75	75	75	75
1	75	75	75	75	75	75
2	75	75	75	75	75	75
3	73	75	75	75	75	75
4	66	75	75	75	75	75
5	59	71	75	75	75	75
6	53	66	74	75	75	75
7	48	62	70	75	75	75
8	43	58	66	72	75	75
9	40	54	63	69	74	75
10		50	60	67	71	75
11		47	57	64	69	73
12		44	54	61	67	71
13		41	51	59	64	69
14		40	49	57	62	67
15			46	54	60	65
16			44	52	58	63
17			42	50	56	61
18			40	48	54	59
19				46	53	58
20				44	51	56
21				42	49	54
22				41	47	53
23				40	46	51
24					44	50
25					43	48
26					41	47
27					40	46
28						44
29						43
30						42
31						41
32						40

4.000 SCHEDULE D - ADDITIONAL DEPRECIATION

For any depreciation that is not reflected in Schedule C, the assessor may adjust for additional depreciation provided acceptable evidence of such loss in value exists.

1999

MINISTER'S GUIDELINES

FOR THE ASSESSMENT

OF

FARMLAND

LINEAR PROPERTY

MACHINERY AND EQUIPMENT

RAILWAY

Alberta
Municipal Affairs
1999

Minister's Guidelines for Farm Land, Linear Property, Machinery and Equipment and Railway Assessment

Part 1: General

1 Application

These Guidelines constitute the

(a) 1999 Alberta Farm Land Assessment Minister's Guidelines;

(b) 1999 Alberta Linear Property Assessment Minister's Guidelines; and

(c) 1999 Alberta Machinery and Equipment Minister's Guidelines

(d) 1999 Alberta Railway Assessment Minister's Guidelines;

and are to be used in conjunction with the provisions of

(e) the 1999 Alberta Farm Land Assessment Manual updated, in the case of land used for farming operations, attached as Appendix I

(f) the 1999 Alberta Linear Property Assessment Manual, in the case of linear property in a municipality, attached as Appendix II

(g) the 1999 Alberta Machinery and Equipment Assessment Manual, in the case of machinery and equipment in a municipality, attached as Appendix III.

(h) the 1999 Alberta Railway Assessment Manual, in the case of railway property in a municipality, attached as Appendix IV

2 General Definitions

In these Guidelines,

(a) "Act" means the Municipal Government Act (SA 1994 cM-26.1);

(b) "assessment year" has the meaning given to it in the Regulation;

(c) "Regulation" means the Matters Relating To Assessment and Taxation Regulation(AR 289/99), as amended.

2.1 Ministerial Prescription

For purposes of these Guidelines and section 2(b) of the Regulation, it is hereby prescribed that the cost of all computer software, including both basic software and applications software, intended for or used in connection with the monitoring, control or operation of any assessable property shall be included in the base cost of the property which is otherwise assessable.

Part 2: Assessment of land used for farming operations

3 Definitions

In this Part,

(a) "Agricultural Use Value" means the value of a parcel of land based exclusively on its use for farming operations;

(b) "Assessment Year Modifier" means the factor which is applied to the value of land used for farming operations in order to determine its value in the year in which assessments are prepared for all property in a municipality;

(c) "farming operation" has the meaning given to it in the Regulation;

(d) "field" means a separately valued area within a parcel of land that is used for farming operations.

4 Calculation of agricultural use value

The agricultural use value of land used for farming operations shall be calculated by

(a) using the agricultural use value base rate table in Schedule A of the 1999 Alberta Farm Land Assessment Manual updated to establish the property's agricultural use value base rate;

(b) multiplying the agricultural use value base rate by the appropriate Assessment Year Modifier prescribed in Schedule B of the 1999 Alberta Farm Land Assessment Manual updated to determine the agricultural use value base rate per acre for the assessment year;

(c) multiplying the agricultural use value base rate per acre by a Final Rating Factor prescribed in Schedule C of the 1999 Alberta Farm Land Assessment Manual updated to determine the agricultural use value per acre for the field;

(d) multiplying the agricultural use value per acre for the field by the number of acres in each field to determine the agricultural use value of the field;

(e) adding together the agricultural use value for each field to determine the agricultural use value of the parcel; and

(f) multiplying the agricultural use value of the parcel by the Farm Service Centre Rating factor prescribed in Schedule D of the 1999 Alberta Farm Land Assessment Manual updated.

Part 3: Assessment of linear property in a municipality

5 Definitions

In this Part

(a) "Assessment Year Modifier", means the factor which is applied to the base cost of linear property in order to determine its replacement cost for the year in which assessments are prepared for all property in a municipality;

(b) "base cost" means the cost of an improvement, as prescribed in the 1999 Alberta Linear Property Assessment Manual;

(c) "linear property" has the meaning given to it in the Act;

(d) "replacement cost" means the typical cost to replace an improvement with a modern unit in new condition.

6 Calculation of assessment

The assessed value of linear property in a municipality, excluding wellsite land, shall be calculated by:

(a) establishing the base cost as prescribed in Schedule A of the 1999 Alberta Linear Property Assessment Manual;

(b) multiplying the base cost by the appropriate Assessment Year Modifier prescribed in Schedule B of the 1999 Alberta Linear Property Assessment Manual, to determine the replacement cost in the assessment year;

(c) multiplying the amount determined in clause (b) by the appropriate depreciation factor prescribed in Schedule C of the 1999 Alberta Linear Property Assessment Manual; and

(d) if applicable, adjusting the amount determined in clause (c) for additional depreciation as prescribed in Schedule D of the 1999 Alberta Linear Property Assessment Manual.

7 Assessed value of wellsite land

Notwithstanding section 6, the assessed value of wellsite land shall be the amount prescribed described in Schedule E of the 1999 Alberta Linear Property Assessment Manual.

Part 4: Assessment of machinery and equipment in a municipality.

8 Definitions

In this Part

(a) "Assessment Year Modifier", means the factor which is applied to the base cost of machinery and equipment in order to determine its replacement cost for the year in which assessments are prepared for all property in a municipality;

(b) "base cost" means the cost of an improvement, as prescribed in the 1999 Alberta Machinery and Equipment Assessment Manual;

(c) "machinery and equipment" has the meaning given to it in the Regulation;

(d) "replacement cost" means the typical cost to replace an improvement with a modern unit in new condition

9 Calculation of assessment

The assessed value of machinery and equipment in a municipality shall be calculated by:

(a) establishing the base cost as prescribed in Schedule A of the 1999 Alberta Machinery and Equipment Assessment Manual,

(b) multiplying the base cost by the appropriate Assessment Year Modifier prescribed in Schedule B of the 1999 Alberta Machinery and Equipment Assessment Manual to determine the replacement cost in the assessment year,

(c) multiplying the amount determined in clause (b) by the appropriate depreciation factor prescribed in Schedule C of the 1999 Alberta Machinery and Equipment Assessment Manual and

(d) if applicable, adjusting the amount determined in clause (c) for additional depreciation as prescribed in Schedule D of the 1999 Alberta Machinery and Equipment Assessment Manual.

10 Additional adjustment under the Assessable Property Regulation

In addition to the assessment calculation prescribed in section 9, the assessed value of machinery and equipment shall be further adjusted by a factor as prescribed in section 2(2) of the Assessable Property Regulation (AR 367/94).

Part 4: Assessment of railway in a municipality.

11 Definitions

In this Part

(a) "Assessment Year Modifier", means the factor which is applied to the base cost of railway in order to determine its replacement cost for the year in which assessments are prepared for all property in a municipality;

(b) "base cost" means the cost of railway, as prescribed in the 1999 Alberta Railway Assessment Manual;

(c) "railway" has the meaning given to it in the Act;

12 Calculation of assessment

The assessed value of railway in a municipality shall be calculated by:

(a) establishing the base cost as prescribed in Schedule A of the 1999 Alberta Railway Assessment Manual,

(b) multiplying the base cost by the appropriate Assessment Year Modifier prescribed in Schedule B of the 1999 Alberta Railway Assessment Manual to determine the replacement cost in the assessment year,

(c) multiplying the amount determined in clause (b) by the appropriate annual traffic factor prescribed in Schedule C of the 1999 Alberta Railway Assessment Manual.